BILLED PARTY PREFERENCE
NETWORK ARCHITECTURE AND CALL FLOWS
BILL-TO-THIRD NUMBER BILLING INFORMATION

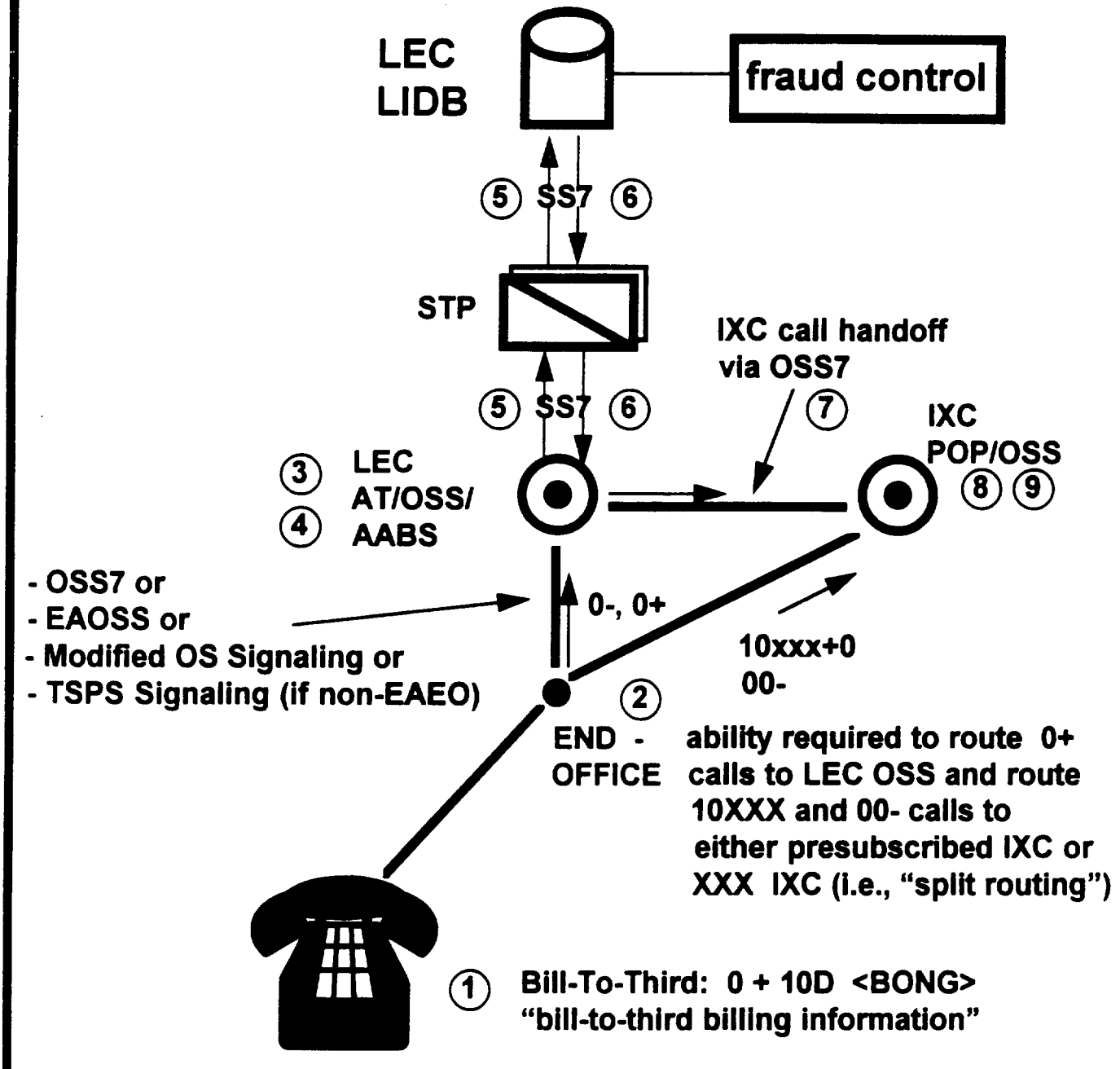

FIG. 1-3

BILLED PARTY PREFERENCE
NETWORK ARCHITECTURE AND CALL FLOWS
891 AND CIID BILLING INFORMATION:
CARRIER ID DONE AT LEC OSS

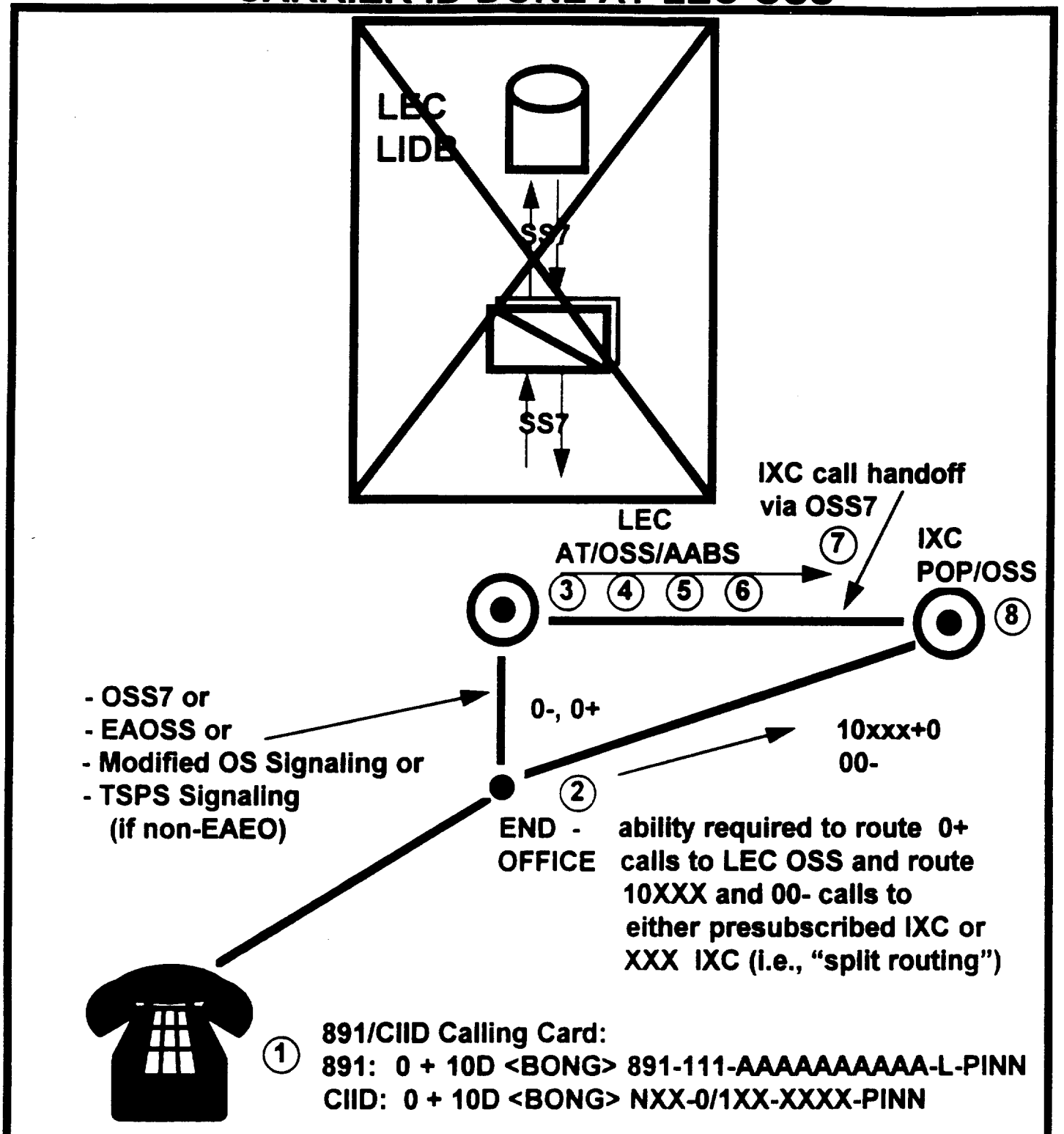

FIG. 1-4

BILLED PARTY PREFERENCE NETWORK ARCHITECTURE AND CALL FLOWS 891 AND CIID BILLING INFORMATION: CARRIER ID DONE AT IXC DATABASE

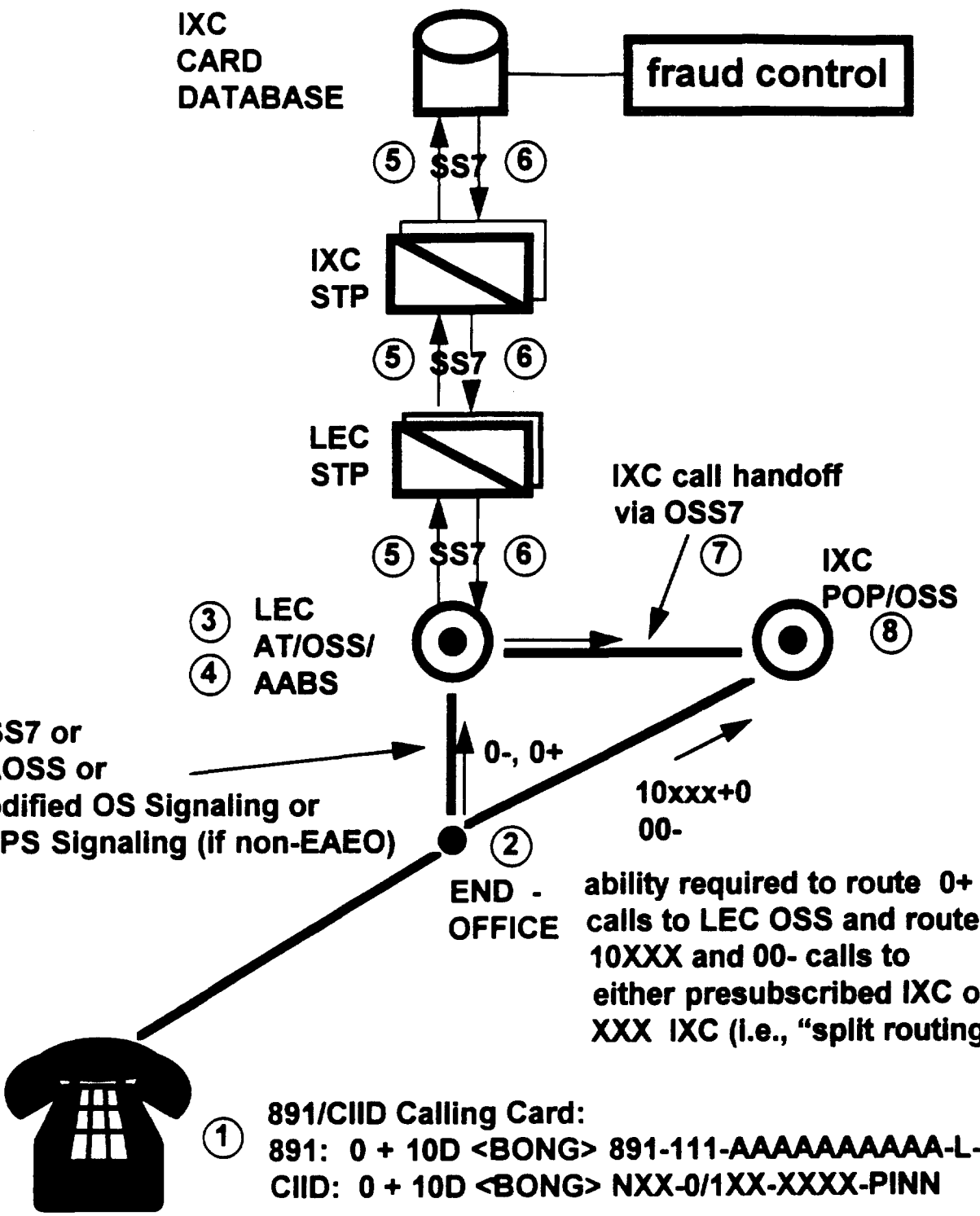

FIG. 1-5

B.1 BPP CALL FLOW

BPP Call Flow

This document describes the call flow for billed party preference proposed by Ameritech, GTE, MCI, Pacific Bell and Southwestern Bell Telephone. It contains two parts: the call flow diagrams, and the call flow notes.

The call flow diagrams are high-level flow charts for a BPP call from the time it arrives at the LEC OSS to the time it is transferred to the receiving IC or disconnected. There are three flow charts, depicting the processing associated with the caller's first attempt, second attempt, and third attempt to enter billing information and be transferred to a carrier for completion. In each diagram, three symbols are used:

- Rectangles with rounded corners are simply labels for points in call processing. If a flow ends on a label symbol containing text other than "end" (e.g., "(B)" from the First Attempt flow), call processing will continue at the first step of the call flow labeled "(B)".

- Six-sided figures represent decision blocks. The process for making the decision is more fully described in the Call Flow notes.

- Plain rectangles represent processing steps. Most of these are also described in the call flow notes.

If a symbol contains the "Δ" character, more information about that step in the call flow can be found in the call flow notes. A table on the first page of the call flow notes gives page references.

BPP CALL FLOW NOTES - INDEX

DECISION PROCESS FOR "CHECK OPT / INFO FORMAT" STEP

The purpose of this step is to interpret the caller's dialing of a billing option. This steps maps dialing patterns or verbal input into a billing option.

Dialed Billing Option Interpretation

The service recognizes the end of the dialing pattern when either the interdigit timer expires or the caller dials "#".

If the caller dials...	the billing option is:
"0"	opr request (operator request)
"11"	See "collect process" below
"12"	See "third number process' below
4D	See "14D billing option process" below.
10D	See "third number process" below
14D	see "14D billing option process" below
17D or 20D	See "commercial credit card process" below
"89X"+*n*D	89 card; see "89 card process" below
none of the above	other

OPEN ISSUE: How do we recognize a request for third-number billing to a non-WZ1 line number?

Collect Process

If the called number is a WZ1 number, the billing option is "WZ1 collect". If the called number is a non-WZ1 number, the billing option is "frgn collect".

In either case, the billed number is the called number.

Third Number Process

If the caller selected third-number billing by entering "12", the caller is prompted for the billed number. If the caller selected the third-number billing by entering 10D, the billed number is the entered 10D number. In either case, the billing option is "WZ1 third-number".

14D Billing Option Process

When the service recognizes a 14-digit billing option, the service consults a switch-based table (or an equivalent logical construct). The first six digits of the dialed 14 digits are the inputs to the table. The table returns exactly one of the following values as the billing option:

- card-route CIID (a CIID card routed to carrier by card number)
- WZ1 14-digit card (a CIID card routed to carrier obtained thru database query, or a foreign World Zone 1 line-number- or RAO-based card, or a LEC-issued calling card)

The billing number is the 14-digit number entered.

Open Issue: The table may contain every known 6-digit combination of valid card-route CIID and WZ1 14-digit cards, or it may contain only card-route CIID cards, and assume that all other 14-digit numbers are WZ1 14-digit cards. If the former is true, the table would also return the value "other" if the first six-digits did not exist in the table.

Commercial Credit Card Process

The entered digits are considered the billing number, and the billing option is CCC.

Open Issue: Is additional screening on the entered 17- or 20-digit number before it's considered a valid commercial credit card? Upon what information is the screening based? Where is this information obtained?

89 Card Process

Upon recognizing an 89 card, the service consults a switch-based table (or similar logical construct) to obtain the length, format and carrier determination method for the card. The input to the table is the card number (or its initial digits) and the outputs are expected length, format and exactly one of the following methods of carrier determination:

- card-route 891 card (an 891 card routed to the carrier indicated by digits 4 through 6 of the card)
- db-route 89 card (an 89 card for which a database query is launched to determined the carrier)
- frgn 89 card (an 89 card for which the carrier is determined by the calling party)

DECISION PROCESS FOR "CHECK BILLING / IC STEP"

The purpose of this step is to inspect the response (or lack of response) to a database query, determine the validity of the billing method, and determine the availability of the PPIC/APIC identified in the query.

This step maps the result of the database query into one of five categories, as shown in the table below.

Part 1: Check Billing

If the result of LIDB query is:	The billing method validity is:
timeout	unknown
ACG in effect	
Network problems	
no trans. for addr of such ntr	
subsystem congestion	
subsystem failure	
network failure	
network congestion	
Protocol problems	
duplicate INVOKE ID	
unrec. operation	
incorrect parameter	
unrec correlation ID	
unrec componenet	
incorrect component portion	
badly struct. comp. portion	
unrec package type	
incorrect transaction portion	
badly struct. trnsctn. portion	
unrec transctn. ID	
Misrouted	
misroute	
Bad Subsystem Number	
unequipped user	

Database Cannot Process	invalid
unavailable network resource	
GTT failure	(there was no network error, but the card
no trans. for specific address	number (inlcuding PIN) or phone number
Missing Group	provided could not be located.)
Vacant Group	
Non-participating Group	
Data Unavailable	
Missing Customer Record	
PIN Mismatch	
unexpected data value	

Card / Service Denial	denied
CSDI=no PINs	
CSDI=denial on CCAN	(The card number / line number was
PSDI=serv. den - threshold	located but service was explicitly denied.)
PSDI=serv. den - nonpaymt	
PSDI=serv. restriction	
PIN restricted, called<>card	
CAI=no collect...at cust request	
CAI=no collect...this number	
CAI=accept intra/reject inter	
TNAI=no third...at cust req	
TNAI=no third...this number	
TNAI=alw. ac. intra/reject inter	
TNAI=verify...nbr/reject inter	
TNAI=verify...opr/reject inter	

Card Accepted or Service Not Denied	valid
PIN Rest. Ind=unrestricted	
PIN restricted, called=card	
CAI=verify collect...cust. req	
CAI=accept intra'verify inter	
CAI=verify... with operator	
CAI=ac intra'verify inter with opr	
CAI=accept all ... without verif.	
TNAI=verify third...this number	
TNAI=verify third...with operator	
TNAI=alw accept third...	

Open Issue: The above categorizations may require minor changes (e.g., GTT Failure), and/or may require some flexibility at the LEC level, to account for differences in local practices. For example, some companies use GTT to block queries which contain invalid billing information; others do not. This could impact the local interpretation of the result.

If the billing is "unknown", "invalid", or "denied", the "Check Billing / IC" step ends here, returning a billing/IC result of either "unknown/-", "invalid/-" or "denied/-" as is appropriate, and does not return a selected carrier. If the billing is "valid", processing continues with Part 2, as described below.

Part 2: Check IC.

If the called number is domestic and the LIDB response shows that no PPIC is indicated in the response, this step returns a billing/IC result of "valid / not ind.", and does return a selected carrier.

If the called number is domestic and the LIDB response contains a PPIC, the service consults internal information to determine if the PPIC has a presence in the LATA. If the PPIC has a presence, this step returns a billing/IC result of "valid / available," and returns the PPIC as the selected carrier. If the PPIC does not have a presence, the service consults internal information to determine if the APIC has a presence in the LATA. If the APIC has a presence, this step returns a billing/IC result of "valid / available," and returns the APIC as the selected carrier. If the APIC does not have a presence, this step returns "valid / unavailable," and does not return a selected carrier.

If the called number is not domestic, and the LIDB response shows that no Preferred INC is indicated in the response, this step returns a billing/IC result of "valid / not ind." and does not return a selected carrier.

If the called number is not domestic, and the LIDB response contains a Preferred INC, the service consults internal information to determine if the Preferred INC has a presence in the LATA. If it does, this step returns a billing / IC result of "valid / available " and returns the Preferred INC as the selected carrier. If the Preferred INC does not have a presence in the LATA, this step returns a billing / IC result of " valid / unavailable " and does not return a selected carrier.

DEFINITION OF ANNOUNCEMENTS

This section to be completed later.

PROCESS OPTIONS FOR SELECTING DEFAULT CARRIER

This process identifies a carrier to receive the call when other carrier selection methods fail or are not available. The precise conditions in which a default carrier is selected can be determined from the BPP Flow diagrams.

If the billing is foreign, the caller is likely to be unfamiliar with the American interexchange carrier market and therefore is unable to make an informed choice of carrier. In this case, the 1+ PIC associated with the calling line is chosen as the default carrier. The 1+ PIC can be obtained in several ways, depending on the implementation chosen by the LEC:

- from signaling from the end-office, if OSS7 or MF EAOSS signaling is supported between the end-office and LEC OSS,
- from an OLNS query to LIDB performed when the call is received.

If the billing is domestic, the LEC OSS may either use the 1+PIC as described above for foreign billing, or ask the caller to select a carrier. In the latter case, the LEC OSS will provide an announcement to the caller. The caller will be able: (1) to specify a carrier if currently interacting with an operator or automated system, or (2) to request an operator if currently interacting with an automated system, or (3) to change his/her billing option, or (4) as a BCC option, to choose a carrier from a randomly ordered list of 3 to 5 randomly selected ICs, or (5) to request a new list of randomly selected ICs.

After a carrier is selected, this step ends, returning the selected default carrier.

OPEN ISSUES: More study is required to determine how the LEC OSS will determine which method of default selection to use for domestic billing. The following has been suggested: The service provides a software-loadtime option to carry out one of the following two default selection methods for domestic billing:

- OPT 1: The service always uses the 1+ PIC.
- OPT 2: The service usually interacts with the caller to select a carrier. When there is a major network failure of some time and many calls are requiring default carrier selection treatment, the service modifies its processing and relies on 1+ PIC until the failure is resolved. The means of measuring the number of calls requiring default treatment, the thresholds for cutting over to 1+ PIC use, and the means for reverting to caller interaction for default carrier selection all require further study.

More study is required to determine how the caller and service will interact to support OPT 2 listed above.

KEY TO INTERPRETING "TRANSFER" STEP

In each transfer step, there are two pieces of information provided. The "IC:" line describes the IC to which to transfer the call. "IC:" may be followed by "resp", meaning the PPIC, APIC or Preferred INC returned by the "Check billing / IC" step, or "def", meaning the default carrier returned by the "sel def IC" step.

The "sig" line identifies the signaling set, i.e., the parameters, to be passed to the IC during the transfer set-up. The sets are identified by number. Each set is fully described in the "BPP Call Flow, Signaling Sets" section of the notes.

SIGNALING SETS

This section identifies the information to be passed to the carrier when a call is transferred. All information is passed in an SS7 Initial Address Message (IAM).[1]

The information passed to the carrier provides three sets of information: (1) conditions information, that tells the carrier how it came to receive the call, and the status of the billing validation: (2) billing information, that describes the billing option requested by the caller; and (3) call information, such as the called party's number.

Conditions Information

When transferring a call, the LEC passes conditions information to the carrier. The conditions information tells the carrier how it came to receive the call, and the status of the billing validation. There are four different paths in the BPP flow diagrams that lead to a "transfer." Each of these "transfer" steps is labelled "sig:1", "sig:2", "sig:3", or "sig:4".

The "Signaling - Conditions Information" table appearing in this section of the notes describes each possible condition for all four sets, and shows for each condition two pieces of information signalled to the carrier. By inspecting the two pieces of signaling information the carrier can determine the conditions under which the call was transferred.

The two pieces of information are carried in the Carrier Selection parameter and Operator Services Information parameter Bill-to specific information field (OSI/BTSI).

Billing Information

The "Signaling - Billing Information" table appearing in this section of the notes describes, for each possible billing option, the information signaled to the carrier.

Call Information

The "Signaling - Call Information" table appearing in this section of the notes describes other call-related information signaled to the carrier.

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1 The specific encodings for the parameters listed may be found in Bellcore Technical Reference TR-NWT-001144, *OSSGR Section 6: Signaling*, or in the current draft working document(s) for the Operator Services Transfer Connection Network Capability in standards group T1S1.3 / ISDN-UP SWG.

Conditions		Parameters	
Set	**Specifics**	**Carrier Selection**	**OSI/BTSI**
1	CIID/891 card - routed based on card number	primary preferred carrier of billed party	no database query
2	billing requires no additional validation; routed to PPIC	primary preferred carrier of billed party	database authorizes
	billing (collect or 3rd nbr) requires verification from billed party; routed to PPIC	primary preferred carrier of billed party	database reports verify by automated means[2]
	billing (collect or 3rd nbr) requires verification from billed party by live operator; routed to PPIC	primary preferred carrier of billed party	database reports verify by operator
	billing requires no additional validation; routed to APIC	alternate preferred carrier of billed party	database authorizes
	billing (collect or 3rd nbr) requires verification from billed party; routed to APIC	alternate preferred carrier of billed party	database reports verify by automated means[2]
	billing (collect or 3rd nbr) requires verification from billed party by live operator; routed to APIC	alternate preferred carrier of billed party	database reports verify by operator
3	domestic billing requires no additional validation; PPIC and APIC unavailable; routed to default carrier selected by calling party	(verbal) instructions from the calling party	database authorizes
	domestic billing (collect or 3rd nbr) requires verification from billed party; PPIC and APIC unavailable; routed to default carrier selected by calling party	(verbal) instructions from the calling party	database reports verify by automated means[2]

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2 The wording of this value is derived from draft standards. A more accurate wording would be "database reports verify by any means". The intent is not to force the use of automation, only to allow it. Pending standards contributions address this issue.

Conditions		Parameters	
Set	**Specifics**	**Carrier Selection**	**OSI/BTSI**
	domestic billing (collect or 3rd nbr) requires verification from billed party by live operator; PPIC and APIC unavailable; routed to default carrier selected by calling party	(verbal) instructions from calling party	database reports verify by operator
	domestic billing requires no additional validation; PPIC and APIC unavailable; routed to calling line 1+ PIC	selected carrier idenitification presubscribed and not input by calling party	database authorizes
	domestic billing (collect or 3rd nbr) requires verification from billed party; PPIC and APIC unavailable; routed to calling line 1+ PIC	selected carrier idenitification presubscribed and not input by calling party	database reports verify by automated means[2]
	domestic billing (collect or 3rd nbr) requires verification from billed party by live operator; PPIC and APIC unavailable; routed to calling line 1+ PIC	selected carrier idenitification presubscribed and not input by calling party	database reports verify by operator
	foreign billing requires no additional validation; PPIC and APIC unavailable; routed to calling line 1+ PIC	selected carrier identification presubscribed and not input by calling party	database authorizes
	foreign collect billing requires verification from billed party; PPIC and APIC unavailable; routed to calling line 1+ PIC	selected carrier identification presubscribed and not input by calling party	database reports verify by automated means[2]
	foreign collect billing requires verification from billed party by live operator; PPIC and APIC unavailable; routed to default carrier selected by calling party	(verbal) instructions from calling party	database reports verify by operator

Conditions		Parameters	
Set	**Specifics**	**Carrier Selection**	**OSI/BTSI**
4	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to default carrier selected by calling party; last database query resulted in SCCP failure	(verbal) instructions from calling party	no database reponse - SCCP failure[3]
	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to default carrier selected by calling party; last database query resulted in return result with reject component	(verbal) instructions from calling party	no database reponse - reject component[3]
	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to default carrier selected by calling party; last database query resulted in timeout	(verbal) instructions from calling party	no database reponse - timeout[3]
	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to default carrier selected by calling party; last database query prevented by code gapping	(verbal) instructions from calling party	no database reponse - ACG in effect[3]

[3] This value for the Operator Services Information parameter Bill-To specific info field has not yet been introduced at standards.

Conditions		Parameters	
Set	**Specifics**	**Carrier Selection**	**OSI/BTSI**
4	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to calling line 1+ PIC; last database query resulted in SCCP failure	selected carrier identification presubscribed and not input by calling party	no database reponse - SCCP failure[4]
	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to calling line 1+ PIC; last database query resulted in return result with reject component	selected carrier identification presubscribed and not input by calling party	no database reponse - reject component[4]
	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to calling line 1+PIC; last database query resulted in timeout	selected carrier identification presubscribed and not input by calling party	no database reponse - timeout[4]
	domestic billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrier; routed to calling line 1+PIC; last database query prevented by code gapping	selected carrier identification presubscribed and not input by calling party	no database reponse - ACG in effect[4]

[4] This value for the Operator Services Information parameter Bill-To specific info field has not yet been introduced at standards.

Conditions		Parameters	
Set	**Specifics**	**Carrier Selection**	**OSI/BTSI**
	foreign billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrer; routed to calling line 1+ PIC; last database query resulted in SCCP failure	selected carrier identification presubscribed and not input by calling party	no database response - SCCP failure[4]
	foreign billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrer; routed to calling line 1+ PIC; last database query resulted in return result with reject component	selected carrier identification presubscribed and not input by calling party	no database response - reject component[4]
	foreign billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrer; routed to calling line 1+ PIC; last database query resulted in timeout	selected carrier identification presubscribed and not input by calling party	no database response - timeout[4]
	foreign billing validity unknown; caller has attempted to enter information at least twice; last entered billing request provided to carrer; routed to calling line 1+ PIC; last database query prevented by code gapping	selected carrier identification presubscribed and not input by calling party	no database response - ACG in effect[4]

89 Card

OSI / Bill-to type	"card - 89C format"
OSI / Special handling	"call completion"
Generic Digits / Type of digits	"card number"
Generic Digits / Digits	card number including PIN
OSI / Bill-to info entry type & handling type	as appropriate to describe: the means caller used to enter data (by DTMF, speech recognition, or operator), and handling (person-to-person or station-to-station)

CIID Card

OSI / Bill-to type	"card - 14 digit format"
OSI / Special handling	"call completion"
Generic Digits / Type of digits	"card number"
Generic Digits / Digits	card number including PIN (14 digits total)
OSI / Bill-to info entry type & handling type	as appropriate to describe: the means caller used to enter data (by DTMF, speech recognition, or operator), and handling (person-to-person or station-to-station)

LEC Calling Card

OSI / Bill-to type	"card - 14 digit format"
OSI / Special handling	"call completion"
Generic Digits / Type of digits	"card number"
Generic Digits / Digits	card number including PIN (14 digits total)
OSI / Bill-to info entry type & handling type	as appropriate to describe: the means caller used to enter data (by DTMF, speech recognition, or operator), and handling (person-to-person or station-to-station)

Collect

OSI / Bill-to type	"collect"
OSI / Special handling	"call completion"
(Called Number)	(called and billed number)
OSI / Bill-to info entry type & handling type	as appropriate to describe: the means caller used to enter data (by DTMF, speech recognition, or operator), and handling (person-to-person or station-to-station)
OSI / Billed line service and equipment[5]	as received in LIDB response
OSI / Billed line treatment [5]	as received in LIDB response

Third Number

OSI / Bill-to type	"third number"
OSI / Special handling	"call completion"
Generic Address / Type of address	"alternately billed number (third number)"
Generic Address / Address signals	billed number (10 digits total)
OSI / Bill-to info entry type & handling type	as appropriate to describe: the means caller used to enter data (by DTMF, speech recognition, or operator), and handling (person-to-person or station-to-station)
OSI / Billed line service and equipment[5]	as received in LIDB response
OSI / Billed line treatment [5]	as received in LIDB response

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5 This field has not yet been introduced into standards. The values to be available in this field are currently being determined through the development of the Originating Line Number Screening Technical Advisory issued by Bellcore.

CCC

OSI / Bill-to type	"card - other format"
OSI / Special handling	"call completion"
Generic Digits / Type of digits	"card number"
Generic Digits / Digits	card number with PIN (17/20 digits total)
OSI / Bill-to info entry type & handling type	as appropriate to describe: the means caller used to enter data (by DTMF, speech recognition, or operator), and handling (person-to-person or station-to-station)

Additionally, for all calls

Called Party Number / Nature of address	indicates that operator-service assistance is requested, and indicates whether the called party is domestic or international
Called Party Number / Address signals	provides called party's number
Charge Number	provides calling-line billing number ("ANI")
Originating Line Information	provides "ANI II" for calling line as received by LEC OSS
Calling Party Number*	provides calling party line number
Forward Call Ind./Bits NM	indicates whether the carrier can apply connection hold for this call (relevant for coin sent-paid processing only, but parameter is mandatory in SS7 and must be sent)
OSI / Original Access Prefix	indicates whether caller dialed call with 0-, 0+, 1+, 01+ or 011+ prefix
OSI / Access Signaling*	indicates whether caller is using dial-pulse or DTMF-capable equipment
OLNS Infomation**	carries relevant information on the originating line as received in the OLNS response, if OLNS query was made.

* Providing this information is a LEC option. Receiving this information is an IC option.

** The nature and coding of this information requires further study.

BPP Flow
First Attempt